Diversification and Employment in Kamaishi City : A Future Recon-sidered

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Abstract Despite the unanticipated difficulties created by the current and prolonged recession in the Japanese economy, measures to create alternative jobs for Nippon Steel employees displaced by the closure of a substantial proportion of the facilities at the Kamaishi Steelworks in 1989 have succeeded in creating more employment opportunities than have been lost. Nevertheless, there have been continuing concerns about the viability of the remaining wire mill, and measures have been taken to reduce costs which have had impacts on Nippon Steel's "new enterprises" strategy and the management of outplacements. The experiences of Nippon Steel and of "invited enterprises" have also underlined the continuing disadvantages that Kamaishi faces in sustaining a viable industrial economy given the city's remote and inaccessible location.

Key words : Kamaishi, steel, diversification, employment

1 Introduction

On March 25, 1989, the fires of the blast furnace at the Nippon Steel Corporation's Kamaishi Steelworks were finally extinguished, bringing to an end over a century of steelmaking in one of Japan's best known single industry "company towns", and reducing steel-related production in Kamaishi to the output from a solitary wire mill (Sargent and Wiltshire 1988 ; Yorimitsu 1993). On the eve of the 1989 closure, Nippon Steel had 2,220 regular employees in Kamaishi, of whom fewer than 300 would be found productive employment in the wire mill. In the face of this dramatic reduction in the demand for labour within the company's core business in Kamaishi, the impact that the direct, indirect and induced effects of this retrenchment would inevitably have upon the local economy, and the continuing commitment of Nippon Steel to maintaining the system of tenure known (somewhat misleadingly) as "lifetime employment", the company adopted a three-pronged strategy to generate new jobs and otherwise discharge its responsibilities to its workforce and to the local community. First, it sought retirements amongst older workers and arranged for permanent transfers of

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more mobile younger workers to other steelworks elsewhere in Japan (Wiltshire 1992). Second, it implemented a number of "temporary" measures, such as outplacements and loans of workers to other firms and other Nippon Steel plants, in order to buy time to implement the third and most radical element of the strategy. This was the creation in Kamaishi of new jobs for its surplus workers in fields sometimes totally unrelated to steelmaking, either directly through the creation of "new enterprises" owned and managed by the steelworks itself, or indirectly through inducements to other companies to relocate their activities in Kamaishi, using Nippon Steel's own contacts and resources to reinforce the efforts of the local authorities to attract new industries to the city.

Nippon Steel's employment strategy in the immediate aftermath of the closure of its steelmaking facilities in Kamaishi was described in an earlier paper (Wiltshire 1991), which identified reasons for guarded optimism about the city's future. The present paper examines some of the outcomes of Nippon Steel's job creation efforts over the subsequent decade, a period marked by a rapid, prolonged and unanticipated deterioration of the overall economic climate within Japan following the bursting of the "bubble economy" of the late 1980s. The research is based on the results of field observations made and interviews conducted in Kamaishi in April and May 1996, and on reports published in the specialist steel industry press, including the newspaper *Tekko Shimbun* (hereafter denoted as *TS*) and Nippon Steel's newsletter *Shin Nippon Seitetsu Sokuho* (hereafter *SNSS*).

2 Nippon Steel's employment strategy

The initial strategy to manage the reduction of the workforce at Kamaishi contained both short term and long term elements. The former included temporary loans and outplacements and the creation of new enterprises oriented more to job creation than to immediate profitability, while the latter included diversification of the product base in line with Nippon Steel's desire to reduce the dependency of the company as a whole on the health of the steel sector, and the attraction of new businesses to Kamaishi to provide permanent homes for redundant steel workers.

With the benefit of hindsight, it can be said that Nippon Steel's diversification plans embodied the optimism which underlay the "bubble economy", and like many other companies (in the steel industry and beyond), Nippon Steel discovered in the harsher economic climate of the 1990s that building new positions in established markets in which competition is already keen is difficult and expensive, and the costs of doing so are much harder to bear when the core business is itself under attack from competitors at home and abroad. Fig. 1 suggests that Nippon Steel has been successful in slimming down the workforce in its Steel Division at Kamaishi to match the

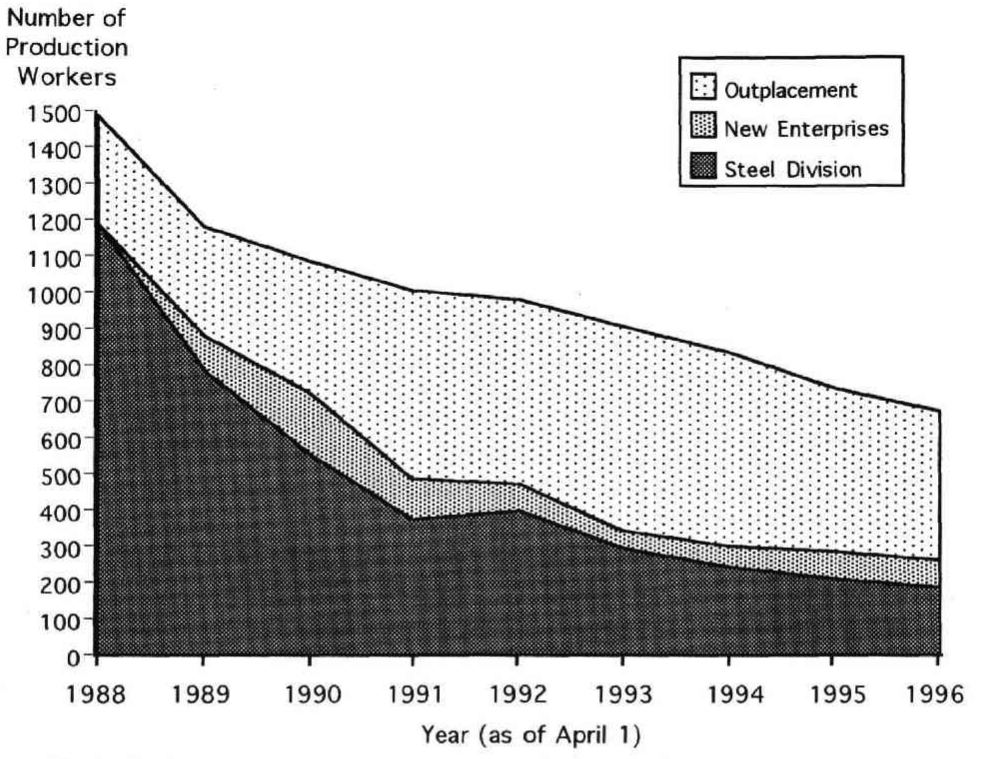

Fig. 1 Employment adjustment amongst Nippon Steel production workers at the Kamaishi Steelworks, 1988-1996

Source : Shin Nippon Seitetsu Kamaishi Seitetsujo 1996.

Notes : (1) The data upon which this graph is based are for production workers (*gijutsu-shoku*) who are registered employees of Nippon Steel (*zaiseki jinin*) only, and exclude administrative personnel (*shumushoku*). Over the 1988-1996 period the number of administrative personnel (excluding those on outplacement) employed by Nippon Steel at the Kamaishi Steelworks fell from 481 to 107 (of whom 82 were assigned to the Steel Division). (2) According to the data presented in Table 1 in Wiltshire (1991), on January 1, 1990 there were 270 production workers in the Steel Division, 400 in the New Enterprises Division, and 450 engaged in "Other Activities", including outplacement (*shukko*). These data are not directly comparable with the data upon which this graph is based, for the following reasons : (i) The data used in Wiltshire (1991) classified as workers in the Steel Division only those actually at work in the wire mill : workers on temporary loan to other Nippon Steel plants (*shokan oen*) or other companies (*shagai haken*) or temporarily engaged in scrapping redundant equipment or working on environmental improvements within the steelworks compound (a total of 315 workers as of January 1, 1990) were classified under "Other Activities". The present series counts these workers as part of the Steel Division workforce (recorded as 559 in total on April 1, 1990). (ii) The data for employment in the New Enterprises Division in Wiltshire (1991) include registered Nippon Steel employees actually working for majority-owned subsidiary companies such as Enicom, Finetec and Nittetsu Business Promote (NBP), while the series upon which the graph is based classifies only employees in directly-managed enterprises as workers in New Enterprises (recorded as 167 in total on April 1, 1990) : employees working for majority-owned subsidiaries are counted under Outplacement (355 in total). A reclassification of the employment data in Wiltshire (1991) shows that there were 160 Nippon Steel production workers employed in directly-managed New Enterprises on January 1, 1990, and 375 on outplacement.

requirements of the wire mill (identified as 270 production workers in 1990), but the success of an enterprise is to be measured by profitability, not employment, and the economic performance of the wire mill has been a source of increasing concern, and the focus of an increasing share of the company's attention, during the 1990s. From employment creation, Nippon Steel's primary goal has gradually but inexorably shifted to ensuring the survival of its core business in Kamaishi.

The company's response has included efforts to promote synergies between the mill, its own new enterprises and new businesses entering the area, to help reduce wire making costs and expand demand for the mill's products. As we shall see below, these efforts have met with only limited success. Like many other companies, Nippon Steel has also refocussed its manpower reduction strategy from slimming down the number of production workers to a direct assault on the administrative bureaucracy, by rationalising its management systems and increasing the distance between itself and redundant workers on outplacement, many of whom have been required to accept a permanent transfer of their employment contracts (*tenseki*). Fig. 1 shows that levels of outplacement amongst the production workforce have remained high, due partly to replenishment from the pool displaced from the Steel Division, and these workers too have been under pressure to leave Nippon Steel, as the company has sought to reduce the burden which subsidies for outplacements place on the wire mill's accounts. The same motive has fuelled prolonged (and on occasion frustrating) efforts to coax the company's directly managed new enterprises into a healthy enough condition to enable their disposal to subsidiaries as going concerns. All of these strands in the recent history of the Kamaishi mill will be explored in subsequent sections, along with the performance of some of the major new businesses which have striven to operate successfully in Kamaishi during the 1990s, again with mixed results which mirror some of the difficulties which Nippon Steel has itself confronted, not least those derived from Kamaishi's location.

3 The wire mill

The wire mill at the Kamaishi Steelworks first entered production on October 14, 1961. It was extensively refurbished in 1975 and again in 1981, and under Nippon Steel's Fourth Rationalisation Plan (1987-90) its efficiency was enhanced by the reconstruction of the heating furnace and other improvements which removed any hint of technical obsolescence. Shorn of its local supply of crude steel by the closure of the blast furnace and related facilities in 1989, the mill has since relied for its raw material on 18 meter long steel billets imported by sea from Nippon Steel's giant steelworks at Kimitsu on Tokyo Bay. Despite the inconvenience this implies, and intense competition from similar mills located elsewhere in Japan, including three owned by Nippon

Steel itself at Kimitsu, Hikari and Muroran, the Kamaishi wire mill has remained competitive and (occasionally) profitable, thanks to the strong reputation for quality enjoyed by its products, the introduction of new and superior grades, and a continuous assault on the mill's cost structure.

The mill produces a range of thicknesses and qualities of wire, but its most important product has been and remains steel cord for radial tyres : it entered the 1990s with a 70% share of the Japanese market and a 25% share of the world market for this product (*Kinzoku Tokuho* November 22, 1991). Other uses for Kamaishi wire have ranged from the monumental—over half of the steel cable used in the construction of the Seto Ohashi Bridge over the Inland Sea was manufactured from Kamaishi wire—to the prosaic, the latter exemplified by the many millions of stainless steel balls which fuel Japan's ubiquitous pachinko machines.

At the beginning of the 1990s the Kamaishi mill had the capacity to produce 58,000 tons of wire per month, and a break-even point of 40,000 tons. Strenuous efforts were subsequently made to reduce the latter to around 36,000 tons, in keeping with a level of output which has fluctuated between 30,000 and 45,000 tons per month. The wherewithal to achieve this goal has not lain entirely in Nippon Steel's own hands, since the price of any particular grade of wire is sensitive to market conditions. Transport costs also effect competitiveness, and are of particular significance for such a remote location. Given the specialised nature of the mill's output it is hardly surprising that its markets are located all over Japan : in the first half of 1995, for example, 26% of domestic sales were to the Kansai District, 23% closer at hand in Tohoku, 19% to customers in the Kanto District and 11% in Chugoku (Shin Nippon Seitetsu Kamaishi Seitetsujo 1996). Exports are limited in volume : over the same period less than 10% of production was exported directly, although a much higher (if indeterminate) proportion ended up in overseas markets embodied in products such as radial tyres. Export sales have been influenced in part by transport costs, but also (and importantly) by the fluctuating value of the yen. The need to boost exports has been recognised as a way of enhancing the mill's profitability at times when the yen has been comparatively weak. In 1997, for example, a drive began to raise the proportion of wire directly exported above 20% (*TS* May 14, 1997) to take advantage of the favourable exchange rate at that time, and to counter the weakness in domestic demand caused by stagnation in Japan's domestic economy.

The reduction of labour inputs is an inevitable component of any drive to reduce costs, and the workforce within the wire mill fell progressively over the decade with the introduction of automated techniques and other improvements to the production process (Fig. 1). From a target of 270 production workers in 1990, actual employment of registered Nippon Steel workers in the wire mill had fallen to 187 by 1996, not counting 82 managerial and administrative staff also assigned to the mill. Continuous

reductions in labour costs helped to keep wire production in Kamaishi profitable, until recently at least. Losses have been posted by the mill since the second half of the 1997 fiscal year, in the face of very difficult market conditions, but operating profits were made in the second half of FY1994, throughout FY1995, and in the first half of FY1997 (*TS* January 20, 1998 and January 26, 1999). However, these calculations ignore the ongoing costs of subsidies to keep workers outplaced from the wire mill in jobs elsewhere, costs which have continually outweighed the mill's operating profits, with the result that the Kamaishi Steelworks as a whole failed to make an overall profit on its ordinary account (ie. inclusive of these non-production costs) at any time in the 1990s.

Costs have also been attacked through improvements to the production process and other means to enhance the technical efficiency of wire making at Kamaishi. Such improvements fall into three main areas: enhanced processing, product innovation, and improvements to materials and product handling and flows—the last of these having distinct geographical implications.

Processing has been enhanced through the introduction of technologies such as LIAS (the Linked Automatic Processing System), which went on-line in 1996. This system automated the microscopic sampling and inspection of wire essential for quality control and enabled the complete de-staffing of this component of the inspection process (*TS* May 22, 1996). Product innovation has centred on the introduction of ever finer grades of wire, right down to ultra-fine wire with a diameter of only 10 microns, less than that of a human hair, as well as 40 micron needle wire used extensively in the computer industry. Improvements within more traditional product lines been also been sought: the mill has endeavoured to establish much closer relationships with its customers to better understand their needs, and it has obtained ISO 9001 certification for its development, manufacturing and control systems as an overt guarantee of quality (*TS* November 19, 1996). But the pressure to innovate has been relentless, and has intensified with the rapid deterioration in market conditions in the late 1990s. As the General Manager of the Kamaishi Works recently explained: "We have to do more to develop new products. Competitive is fierce, and it is fair to say that the true value of this mill is going to be questioned in respect of whether or not it has the capacity to develop new products that will succeed on world markets" (*TS* January 26, 1999).

Significant cost reductions have also been achieved through rationalisations in the handling of materials and distribution of products. In 1996, for example, plans were announced for the construction of an all weather berth in Kamaishi Harbour, the largest single investment in wire-related facilities at the Kamaishi Works since 1989 (*TS* May 7, 1996). At the time of this announcement around 70% of Kamaishi's wire output was distributed to end users by sea, and the remaining 30% by road, so any

improvements to the quality of the port facilities in Kamaishi had significant implications. Sea-born distribution of the mill's output was further improved in 1998 when arrangements were concluded for the scheduled roll-on/roll-off ferry which plies the route between Tomakomai (in Hokkaido) and Kawasaki to call additionally at Kamaishi to take on consignments of wire destined for the Kanto District (*TS* May 25, 1998). The cost of overland shipments has also been reduced by using rail freight containers to supply specific markets, such as the Hokuriku District (on the Japan Sea coast), where this offers advantages over both road and sea transport. Until 1997 wire destined for Hokuriku was sent by ship to Osaka, and thence by lorry overland to end users. This caused problems with delivery dates and with the maintenance of product quality in transit. The use of rail freight containers, transported by road across the Kitakami Highlands to the rail freight terminal at Morioka, made it possible to transport goods without reference to the weather, and to reduce the period in transit from five days to four. The elimination of intermediate handling also helped to maintain the quality of the product (*SNSS* March 19, 1997). The handling of products within the mill prior to distribution has also been improved significantly with the construction of a second automated racked storage facility, which has doubled storage capacity to 20,000 tons (or two weeks' output) and helped to reduce spoilage losses by reducing the amount of handling required (*TS* August 19, 1998).

4 The quest for synergies

Another way that Nippon Steel has attempted to boost the profitability of the wire mill has been through the encouragement of new enterprises which either make use of the mill's output or impact on the cost of the mill's raw materials (Wiltshire 1991, p. 21). Until very recently, however, this quest for local synergies had proved unproductive. The only business in Kamaishi that makes significant use of wire products is Koshuha Netsuren, a manufacturer of reinforced concrete pilings, which opened its Kamaishi plant in 1982, well before the closure of the blast furnace, and which has not undergone any noticeable expansion in the 1990s: employment at its facility in Kamaishi actually fell between 1990 and 1996. Nor have efforts to expand demand for wire products elsewhere in the Tohoku District met with much success, beyond an increase in supplies to Tokyo Steel Cord's factory in Kitakami (*SNSS* October 19, 1994).

Other steel-related linkages have been established, but with other parts of Nippon Steel's business, not the wire mill. Shirakawa and NS Okamura are the two main examples, both of which are discussed at length in Section 7 below. These companies combine consumption of steel materials (brought in from elsewhere) with the use of blue collar labour formerly employed in the steelworks itself. A newer (if much

smaller) example is Dowa Forging, a Tokyo-based company that controls 95% of the domestic market for the forks attached to heavy duty fork-lift trucks, which opened a factory in Kamaishi in 1996 to manufacture medium-sized forks with an initial workforce of around 20 people (*SNSS* June 23, 1995). Amongst Nippon Steel's directly-managed new enterprises, that manufacturing specialised bodies for commercial vehicles (founded in 1989) has the most obvious linkages with the steel industry as a consumer of sheet metal, and was once hailed as "an example of a successful enterprise which is serving a new market but also making good use of the workforce's existing skills" (Wiltshire 1991, p. 9). This judgment was premature : the truck body business struggled throughout the 1990s to achieve profitability, as production continued to lag behind capacity, and by 1996 employment had halved from a peak of thirty registered Nippon Steel employees in 1991 to just fifteen, aided by a handful of workers from the company's local subcontractors. Other linkages to the core business are still more tenuous : specially treated timber from the Kamaishi "Nittetsu Wood" enterprise, for example, has been used to line the holds and loading cradles of ships carrying hot steel between Nippon Steel's various facilities around Japan (*SNSS* May 11, 1994).

The quest for synergistic links finally began to bear fruit in 1995, however, when a wholly new opportunity arose for Nippon Steel to make productive use of underutilised assets in Kamaishi. A revision to the Electricity Enterprises Law introduced a new power supply regime to Japan, the "bidding system for the wholesale supply of electricity", which allowed Independent Power Producers (IPPs) to engage in electrical power supply, breaking a monopoly previously held by the electricity utility companies. Nippon Steel responding by concluding contracts to supply electricity from new coal-fired power stations to be constructed at five of its steelworks : Yawata, Hirohata, Muroran, Oita and Kamaishi. The Kamaishi IPP enterprise will have a generating capacity of 136,000 kW, and is scheduled to come on stream in July 2000. According to the company, the aim of participating in electricity production "is to meet growing demand for electricity by supplying low-cost electricity on a stable basis, produced employing power-generation know-how acquired from in-house power generation and utilising steelworks infrastructure such as spacious land, exclusive ports and raw material yards" (Nippon Steel 1998, p. 8). In Kamaishi the land required for this enterprise has been released by the demolition of the derelict blast furnace, completed in March 1997. The new power station, which represents the largest single investment made within the Kamaishi Steelworks compound for many years, promises cheaper power supplies and hence reduced production costs in the wire mill. Coincidentally, the construction work associated with this enterprise has itself generated demand for the products of local manufacturers at a time when markets are very hard to find. The concrete piles to support the weight of the new structure and its turbines contain wire from the mill, the reinforcing rods within the concrete that

forms the structure's base were made from the scrap generated by the demolition of the blast furnace, and the structural elements are being assembled from steel beams by Shirakawa at its Kamaishi factory (*TS* November 24, 1998).

5 Rationalising administration and outplacements

Initial plans for managing employment reductions in Kamaishi following the 1989 closure were primarily geared towards reducing the blue collar production workforce (*gijutsushoku*) by whatever means possible (Wiltshire 1991). During the 1990s, however, many large Japanese companies refocussed their cost-cutting efforts on the reduction of administrative overheads, in an assault on the traditional job security of the white-collar "salaryman" (Wiltshire 1995, Chapter 9). While Nippon Steel has worked hard to reduce its costs and still defend the principle of "lifetime employment" for its core workforce (both white and blue collar), the scope of that commitment has suffered erosion at the margins as the recession in the industry has deepened, a trend which has particularly affected office staff, older workers, and those who are already half adrift on outplacements.

In 1989, 33.2% of the permanent (*zaiseki*) workforce of 1,760 at the Kamaishi Works was classified as administrative staff (*shumushoku*), a share which had fallen marginally to 30.8% by 1996 out of a workforce of 970. If we exclude from the calculations those white collar workers who had been outplaced, however, the effect is far more dramatic : 23.3% of the locally-based permanent workforce at the Kamaishi Works was classified as white collar in 1989, but by 1996 this had been slashed to just 13.8% (Shin Nippon Seitetsu Kamaishi Seitetsujo 1996). The administrative structure of the steelworks was slimmed down, and extensive investment was made in information technology to enable individual managers to take on more responsibilities, enhance their span of control and hence increase their efficiency. Under the Third Medium Term Management Plan for the Kamaishi Works (FY1994-1996), the company aimed to rationalise its administrative personnel by 45%—compared with a 20% reduction in the production workforce (*SNSS* May 2, 1994).

Meanwhile, older workers (of whatever kind) who had previously been outplaced faced pressure to sever their links with their old employer. In the immediate aftermath of the furnace closure, the emphasis had been on creating new employment opportunities to absorb redundant workers irrespective, in the case of directly managed new enterprises, of whether those enterprises might be profitable or not. In the 1990s such generosity became untenable, given the impact of the subsidies paid in respect of outplaced workers on the profitability of the wire mill. Under its Third Medium Term Management Plan, Nippon Steel identified the transfer of employee registration (*tenseki*) to the destination company of the outplacement following volun-

tary retirement from Nippon Steel (and hence severance of any obligation to pay subsidies) as an important means of reducing its costs, although these transfers were also presented as being in the best interests of the destination company. Under the Plan, Nippon Steel required all of its employees in Kamaishi over the age of fifty-four to transfer permanently to other companies, and by April 1, 1996, a total of 272 former employees, the majority of them blue collar workers, had resigned from Nippon Steel and registered instead as employees of the companies to which they had been previously outplaced. Of these former Nippon Steel employees, a substantial minority (114, or 42%) were taken on by Nittetsu Fine Products (Shin Nippon Seitetsu Kamaishi Seitetsujo 1996).

6 Relinquishing the new enterprises

As worries over the profitability of its core business in Kamaishi mounted, Nippon Steel increased its efforts to offload its remaining new enterprises and thereby reduce cost pressures on the mill. When interviewed on the subject in 1996 the General Manager of the Kamaishi Works was blunt: he noted that while the wire mill was generating profits, costs in the directly managed new enterprises were "not under control, because they are overstaffed. The directly managed enterprises employ over 90 people, and this puts pressure on costs and makes it difficult to achieve overall profitability" (*TS* April 30, 1996). The company had never intended to maintain a permanent role in the management of these enterprises, and during the 1990s each met one of two fates: closure, on the grounds that the enterprise concerned had no prospect of ever making a profit, or transfer into the arms of a subsidiary company established specifically to take responsibility for developing the enterprise into a going concern.

The subsidiaries initially established to perform the latter function were NBP ("Nittetsu Business Promote") Tohoku, founded in 1987, and, Finetec, founded in 1986, which were merged in April 1993 to form Nittetsu Fine Products (NFP), a company jointly owned by Nippon Steel (64% of share capital) and its general trading subsidiary Nittetsu Shoji (36%) (*SNSS* May 13, 1996). NFP inherited a number of successful enterprises from its predecessor companies, including the manufacture of body warmers and deoxygenation tablets from Finetec and soy-based reconstituted protein meat substitute sold under the name "tanpakki" from NBP Tohoku (Wiltshire 1991, pp. 7-8). Since 1993 NFP has absorbed most of the remaining new enterprises formerly managed by Nippon Steel, although some activities were farmed out to other firms such as Yamada Seimitsu Seisakusho, which took over Nippon Steel's CNC lathe enterprise in 1991, or simply shut down, the main casualty being an unsuccessful ceramic fabrication enterprise.

At the time NFP was formed, Nippon Steel's directly-managed new enterprises employed around 100 former steelworkers, half the number employed just three years earlier. As a senior official in the Kamaishi Works noted at the time, this didn't mean that 100 workers had lost their means of support. Rather, it signified that while Nippon Steel had initially created the means to keep 200 people in some form of employment in these enterprises, it subsequently found better, more productive, and more profitable things for half of them to do (*TS* May 11, 1993). The implication, of course, is that the 100 workers remaining in the directly-managed enterprises still *hadn't* been found something better to do, and great efforts were expended during the 1990s to reverse this situation.

The first transfer of a directly managed new enterprise to NFP took place in July 1993, when it acquired the Miniature Orchid Cultivation Centre, a small but successful horticultural enterprise located on the Heita land reclamation site which has since won national recognition for the quality of its products. That left seven directly managed enterprises still to be dealt with, three of which (the manufacture of Nittetsu Wood and mechanical seals, and a laboratory specialising in the preservation of exhumed cultural treasures) were considered to be doing sufficiently well to justify their being transferred to NFP in May 1996, adding between them seventeen former steelworkers to the existing NFP workforce of 286 (Shin Nippon Seitetsu Kamaishi Seitetsujo 1996).

The Resin-Injected Wood Products Fabrication Centre (Nittetsu Wood), which was founded in 1989, has grown very slowly in employment terms, but it has successfully established its reputation in a number of niche markets. Before being transferred to NFP it had already entered the market for "log houses", it had developed its own line of garden furniture for use in public parks, and the early promise of sales to the railway sleeper replacement market had been born out : by early 1993 it had supplied 50,000 sleepers to JR (*TS* April 22, 1993). The water-resisting and non-toxic qualities of its products subsequently helped to secure new uses in civil engineering projects in aquatic environments, such as reinforcement structures for river banks and decking for nature trails in wetland areas, such as that installed at Lake Izunuma in Miyagi Prefecture in 1998 (*TS* March 17, 1998). Given these successes it may seem odd that Nittetsu Wood was not in a fit state to be spun off at an earlier date. The problem, however, and one by no means unique to this enterprise, was that healthy sales could not be translated into healthy profits, because competition even in niche markets was fierce and Nippon Steel had no inherent advantage as a supplier—other than the ability and willingness to write off losses, both of which steadily evaporated.

The second enterprise transferred to NFP ownership in 1996 produces "mechanical seals", devices which prevent leakage around pistons under hostile environmental conditions widely used in industries such as paper-making, oil-refining and steelmaking. In 1992 another of Nippon Steel's directly managed new enterprises, the Preci-

sion Castings Foundry (see below), started to manufacture and assemble components for modular mechanical seals under license from a company called SealTec. The new product was an instant success: orders from within the Nippon Steel Group, including the Kimitsu and Nagoya steelworks and Nittetsu Chemicals, were soon followed by others from unrelated companies and from abroad (*TS* April 14, 1992). For the first two years mechanical seal production and assembly were simply treated as part of the foundry's business, but the market potential of this product eventually prompted a rethink, culminating in the takeover of SealTec by Nippon Steel in 1994 and the relaunch of mechanical seal production at Kamaishi as an enterprise in its own right, as a partnership between Nippon Steel, NFP and Mitsubishi Shoji. Despite the bright start, however, intense competition from other suppliers made it difficult for the Kamaishi operation to come anywhere close to meeting its goal of a ten percent share of the domestic market.

Following the transfer of Nittetsu Wood, mechanical seal production and the Cultural Treasures Preservation Centre (Wiltshire 1991, p. 9) to NFP in 1996, four directly managed enterprises remained for Nippon Steel either to offload or to close. In the event, all four were placed under NFP's management in February 1997, in return for payments for the land, the buildings and other capital investments involved, plus royalties for the technologies embedded in these products (*TS* March 17, 1997). This transfer took place not because these enterprises had finally become profitable, which they hadn't, but because Nippon Steel had clearly decided to draw a line under its employment creation ventures in Kamaishi after a decade of involvement, in order to concentrate its energies on its core business of wire making.

The future for all four enterprises is uncertain. The fabrication of truck bodies has already been mentioned, and in this enterprise production has continued to lag behind capacity, despite Nippon Steel's best efforts to rationalise the production process and thus counter fierce competition in a recession-hit market. In its turn, NFP has adopted a new strategy which involves the creation of new niche markets through product development and targeted marketing (*SNSS* February 2, 1997). The Precision Castings Foundry (now known as Nittetsu Incaste) has also been mentioned —as the seedbed for the mechanical seals enterprise. After losing control of mechanical seals to the new enterprise, the foundry faced difficulties in reducing costs quickly enough to make its remaining product lines profitable in their own right, although production of the components for the seals continued, and the business continued to grow rapidly. By the time control passed to NFP, the foundry employed 43 people in all, but of these only 5 were from Nippon Steel, the remaining 38 being employees of subcontractors, 15 of them women. The challenge facing NFP has been to find ways of reducing the number of stages in production (and hence the amount of handling required) within the foundry, and to standardise the range of products to raise

efficiency through mass production and thereby reduce costs (*TS* February 27, 1997). The third enterprise transferred to NFP in 1997 was one of the very first to be established—the Kamaishi Engineering Centre. The Centre has always been geared primarily to soaking up excess supplies of redundant male steel workers, and in March 1996 it had 40 Nippon Steel employees on its books (Shin Nippon Seitetsu Kamaishi Seitetsujo 1996). During the 1990s the range of work undertaken by the Centre expanded rapidly, both sectorally and geographically, in the search for profitable means of employing this labour. In 1994, for example, it took responsibility for machinery maintenance tasks in the main works, and thus made a direct contribution to the drive for greater efficiency within the wire mill, but it also achieved external success : in April 1994, for example, it was accredited as a designated competitive bidder by Iwate Prefecture in respect of business connected with the maintenance and preservation of prefecturally owned facilities and equipment. The geographical expansion of the Centre's activities has inevitably served to highlight the inconvenience of Kamaishi's location, however, even within Iwate Prefecture, and in response, the Centre has established a branch operation of its own in Kitakami City in central Iwate, to improve market access. As for the fourth enterprise, the Kamaishi Testing and Analysis Centre, which in 1996 provided employment for 18 of Nippon Steel's registered workers, while it has been successful in building on the inherited expertise of the Kamaishi Works in the testing and analysis of raw materials and final products in the metallurgical and heavy engineering industries, and in generating business from far beyond the confines of the steel industry, it faces the problem of generating sufficient business to cover the high capital costs of the sophisticated equipment upon which its services depend. In taking over the Centre, NFP could at least draw some encouragement from a reported increase in orders both from within and outside Iwate prefecture for both surface and internal analysis and structural analysis, fields in which, *ceteris paribus*, demand is expected to increase in the future (*TS* February 2, 1997).

The spinning off of these last four directly-managed new enterprises should have brought Nippon Steel's decade of direct involvement in new enterprises to an end—and may have done so. Certainly there will be no repetition of the scale or diversity of involvement in new enterprises, because the residual workforce in the wire mill is so small. It is by no means inconceivable, however, that further deterioration in market conditions across the Japanese economy could undermine the viability of the wire operation to the point where Nippon Steel's commitment to maintaining employment will be tested yet again. Having experienced the extended birth pains of the enterprises now finally offloaded to external management, however, the company seems unlikely to go willingly down the same path again.

7 Mixed fortunes amongst the "invited enterprises"

Of far greater importance to Nippon Steel's plans (and indeed Kamaishi City's plans) for the long term resolution of the employment problem created by the 1989 closures has been the encouragement of inward investment by so-called "invited enterprises" (*yuchi kigyo*). Between 1987 and 1990 such investments created over 800 new jobs in Kamaishi (Wiltshire 1991, p. 15), and by 1996 total employment in all invited enterprises (excluding those in which Nippon Steel was a majority shareholder) was just under 2,000, including nearly 270 present or former employees of Nippon Steel (Table 1). The creation of so many new jobs in the Kamaishi area must be acknowledged as a major achievement. Many of the invited enterprises, including large employers such as Nippon Phillips (formerly PNN), Iwate Hoken (*ibid*, p. 16) and Chita Seimitsu Kogyo, draw their labour supplies not from Nippon Steel but from local external labour markets, including those for new male and female high school graduates and former employees of Nippon Steel's subsidiaries and suppliers, and in so doing they have made an important contribution to the diversification of the local economy. Just three of the five largest invited enterprises account for over 80% of the new jobs created for present and former Nippon Steel employees, however, and therefore merit

Table 1 Employment in major "invited enterprises" (*yuchi kigyo*) in Kamaishi : April 1, 1996

Name	Employees in Kamaishi	Of whom, present of former Nippon Steel employees	Of whom, employment contract transferred (*tenseki*)
SMC†	920	78	19
Nippon Phillips†	265	5	1
Shirakawa KK*	198	92	32
Iwate Hoken†	131	0	0
NS Okamura*	123	52	9
Kaiyo Bio Kenkyujo*	63	11	0
Chita Seimitsu Kogyo†	53	0	0
Other†	179	15	2
Other*	71	15	1
Total	1993	268	64

Source : Shin Nippon Seitetsu Kamaishi Seitetsujo 1996.

Notes : Only those companies with 50 or more employees in Kamaishi have been listed by name.

*Companies with less than 50% Nippon Steel share ownership, but with directors appointed by Nippon Steel.

†Companies with insignificant or no Nippon Steel share ownership, and without directors appointed by Nippon Steel.

particularly close attention. Of the three, the largest, SMC, has been notably successful, but the other two, Shirakawa and NS Okamura, have faced problems which call into question the long term prospects for Nippon Steel's employment strategy in Kamaishi.

SMC is Japan's leading manufacturer of air compression equipment, and between 1991, when production commenced at its Kamaishi factory, and 1996 it grew to rival Nippon Steel as the largest single employer in Kamaishi, and to far exceed Nippon Steel in this capacity once the effects of outplacement are taken into account. SMC has some technical linkages to Nippon Steel and its affiliates—it receives part of the output from the Precision Castings Foundry, for example (*Kinzoku Tokuho* November 25, 1991)—and its factory is located on land formerly occupied by Nippon Steel company housing, but it depends primarily upon external labour markets for its employees in Kamaishi (less than 10% of its workforce originally came from Nippon Steel), around half of whom are females engaged in light assembly tasks, and the Kamaishi facility is just one of a dozen factories owned by the same company and manufacturing similar products. The future for the Kamaishi factory is contingent, therefore, not only upon the state of the market for air compression equipment but also on the relative costs of production here and at the company's other factories, in Japan and abroad. Low cost labour (by Japanese standards) and state of the art manufacturing facilities are both positive factors for the company's future in Kamaishi, but labour costs are high by international standards, and the production facilities will age, so there are no grounds for complacency regarding SMC's future contribution to employment in Kamaishi.

Shirakawa, on the other hand, had drawn nearly half of its labour force in Kamaishi from Nippon Steel (Table 1), and accounts for fully half of all former Nippon Steel employees who have had their employment contracts transferred to invited enterprises. Shirakawa is a specialist steel frame fabricator, originally based in Aikawa in Kanagawa Prefecture, which opened what was at that time its first branch factory, on land formerly occupied by steelmaking facilities within the Kamaishi Works compound, in 1990. From a local perspective, Shirakawa was an ideal catch : it offered the prospect of jobs in heavy engineering well suited to men who had spent their working lives amidst the clatter and machinery of the steel mill, and thus an obvious destination for outplacements from Nippon Steel, as well as a chance for ex-employees of local subcontractors to find jobs too. Thus, when the factory first opened, its staff of 70 included 40 outplaced Nippon Steel workers, and the hope was that this number would eventually rise to 100 or so, out of a total workforce of 150. At first all went well ; indeed, within a year of opening its Kamaishi Branch the company had announced plans to build a second factory on adjacent land, to build steel pillars and boxes, which would turn the installations at Kamaishi into a fully integrat-

ed production facility for steel frame structures, with a total workforce of around 300, including 120~130 outplaced Nippon Steel workers (Wiltshire 1991, p. 17).

The fundamental problems which Shirakawa soon confronted, however, echo those which led to the downfall of Kamaishi as a centre for crude steelmaking in the first place, especially those related to Kamaishi's poor location. When it first commenced operations at Kamaishi, Shirakawa brought in most of its raw materials by sea, and the initial plan was to dispatch the factory's entire output by sea as well to the Southern Kanto market, at first in component form for final assembly at Aikawa, but subsequently as completed structures dispatched directly to construction sites in and around Tokyo. This plan was soon abandoned, however, in favour of overland transport by truck, because the alternative would have required prohibitively expensive investments in transshipment facilities in Southern Kanto to enable onward deliveries. The plan also fell foul of the requirements of the "just-in-time" system of delivery to construction sites, which could only be met to the customers' satisfaction by using road transport. The result was that by 1995 some 90% of output left Kamaishi by road (*TS* September 27, 1995).

Overland transport meant higher costs, plus the sheer inconvenience of transporting very heavy and irregularly configured loads across the Sennin Pass to central Iwate Prefecture before completing the long journey south to Tokyo. At the time the Kamaishi facility was first mooted transport cost considerations were less pressing because the property market in Southern Kanto was booming. But when the "bubble economy" burst, and market conditions tightened, the spatial margin of profitability retreated southwards, leaving the Kamaishi facility seriously exposed, and the company as a whole facing a loss of around 9% on sales (*TS* December 12, 1995). By then, the option for Shirakawa likewise to retreat south had been foreclosed by the cramped nature of its site in Aikawa, which could not accommodate further expansion, so in 1995 it opted for the alternative of concentrating production at Kamaishi and selling off the Aikawa site, in the hope that the creation of a more efficient production system at Kamaishi would outweigh the transport cost penalties involved. At the same time, the company slimmed its overall production capacity—and its workforce in Aikawa, the bulk of which was offered "voluntary" retirement or redundancy terms (Shirakawa 1996).

Under these circumstances, it is hardly surprising that Shirakawa's initial promise as a major source of new employment in Kamaishi failed to materialise. Its workforce in Kamaishi peaked in July 1993 at 218, and fell back to 198 by April 1996 (Table 1) as the company reduced the number of ex-Nippon Steel workers on its books. Worse was to follow. As the market deteriorated further, the company attempted a novel solution to its problems: in September 1996 it agreed to what was in effect a take-over bid from a much larger steel fabricator, Kawada Kogyo, which took a 51%

shareholding, thereby transferring Shirakawa from Nippon Steel's industrial grouping (*keiretsu*) to its own. The takeover transformed the location of the Kamaishi facility in terms of corporate organisation, for it now became one of four factories owned or controlled by Kawada Kogyo in Toyama, Shikoku, Tochigi and now Iwate, with a combined workforce in 1995 of over 1,600 (*TS* September 11, 1996).

This injection of new capital and managerial expertise might have turned Shirakawa's fortunes around in better times, but as the slump in the Japanese construction industry continued, so the new management was obliged to seek even more radical ways of controlling costs. One option considered was to diversify into a new field, bridge-building, which had inherent attractions : bridges are built all over Japan, not just in Southern Kanto, so there would be a greater chance of obtaining orders locally where the locational disadvantages of Kamaishi would count for less, and also, unlike the company's traditional markets, bridges are funded as public works, and expenditures on public works have been an important form of counter-cyclical spending. The option was rejected, however, on the grounds that there were already too many specialist firms in the market whose experience and expertise would give them a significant competitive edge over newcomers (*TS* November 4, 1998). Instead, the company opted to boost productivity by cutting its rate of subcontracting by 20%, and from November 1998 it began the phased introduction of a 10% across-the—board cut in wages for all its employees.

The other major employer of former Nippon Steel workers amongst Kamaishi's "invited enterprises" has fared little better in the current recession. NS Okamura was established in 1991 as a joint venture between Nippon Steel and Okamura Seisakusho, a leading manufacturer of metal office furniture and substantial end user of Nippon Steel's thin plate steel. Nippon Steel would contribute land, buildings and labour to the venture, while Okamura Seisakusho would supply its technical knowledge of production processes. Initial employment projections were that around 200 new jobs would be created, half of which would be filled by employees on outplacement from Nippon Steel (*Kinzoku Tokuho* July 9, 1991). A site for the new joint venture was found in a storage building in the steelworks' central storage yard, 30 workers were dispatched (*haken*) temporarily to Osaka for training by Okamura Seisakusho's Kansai subsidiary, and production began in September 1992, initially of desk extensions and flaps, but subsequently also including desk surfaces and legs, all of which were to be shipped to Okamura Seisakusho's Yokohama factory for final assembly. The sheet steel used at Kamaishi came from Nippon Steel's Kimitsu Works via the Coil Centre at Sendai where it was pre-processed (*SNSS* November 11, 1992).

The original sales target for the joint venture was subsequently missed by a wide margin, due primarily to the collapse of the office furniture market which followed the demise of the "bubble economy". Ministry of International Trade and Industry

figures show that between 1986 and 1990 production of office desks in Japan doubled from 2.2 million units to 4.4 million units—but then tumbled to 2.92 million units in 1992, and 2.51 million units in 1994 (NS Okamura 1996). Poor market conditions were certainly reflected in the value of NS Okamura's output, which stalled at just one third of the initial target. The collapse of the market hit the Kamaishi operation particularly hard, because it was geared up to produce components for high quality items of office furniture, but many cash-strapped companies responded to the recession by trading down to lower quality equipment, shifting demand to cheaper, standard models. In response, NS Okamura has diversified its output, to include items such as bedside cabinets, bookcases and even display stands for costermongers. Even so, as with sales, so employment targets have also been missed : as of April 1, 1996, the company still had only 123 employees, 52 of whom had been outplaced from Nippon Steel, half the number originally projected.

8 Conclusion

While there are continuing and genuine concerns about the long term viability of new and invited enterprises in Kamaishi and indeed of the wire mill itself, these should not obscure a success story in employment creation which has largely justified the guarded optimism expressed at the beginning of the decade (Wiltshire 1991, p. 21). More new jobs have been created in Kamaishi since the closure of the blast furnace than have been lost at the steel mill, and many of these new jobs have been of types suited to the skills and expertise of former steelworkers. This performance has been all the more remarkable given the severe and unanticipated effects of the prolonged recession in Japan which have caused important changes in Nippon Steel's corporate strategies. Diversification plans for Kamaishi were once flagged as "a microcosm of what the company itself intends to become" (*ibid.*, p. 4). In the event, developments at Kamaishi have certainly reflected trends elsewhere in Nippon Steel's operations, but not in the way anticipated, for the 1990s have seen a renewed challenge to the company's core business (and to the entire Japanese steel industry) which has required concentrated attention, unencumbered by new enterprises which have proved to be problematic and frequently loss-making. While redundant employees in Kamaishi have faced the uncertainties and inconveniences of outplacement—and latterly of resignation and reemployment by other firms, this too has been a reflection of Nippon Steel's evolving corporate strategy across the company as a whole, rather than of conditions specific to Kamaishi alone.

Nevertheless, the events of the past decade do demonstrate that Kamaishi's locational handicaps still matter, despite improvements to the port and seaborn transport links and to the main road between Kamaishi and central Honshu. The

problems faced by Shirakawa and indeed by the wire mill itself are good illustrations of how Kamaishi's remoteness creates both physical problems (difficulties of transporting awkward loads and problems of deterioration of product quality in transit) and organisational problems (particularly in meeting the requirements of customers' "just in time" production systems). These handicaps can be and have been addressed through improvements to transport links, but the *relative* disadvantage of Kamaishi firms relative to alternative suppliers in locations closer to the main markets will always remain. And the decade has also shown that there are no easy ways of overcoming this locational disadvantage by substituting new businesses for old ones, given the intensely competitive environment which most new enterprises face.

In short, the battle to secure a viable economic future for Kamaishi has gone well so far but must continue. One thing that is certain, however, is that after a decade of managed contraction, Nippon Steel's own contribution to Kamaishi's future will inevitably be less prominent than in the past. Although the company still owns around a fifth of all habitable land in Kamaishi, and the majority of the city's industrial land, its steel-related operations are no longer the only major employer in Kamaishi, nor even the largest. As a result, the future prosperity of the city will be less obviously mediated and managed as an internal concern of one major company, and more directly affected by the overall health of the Japanese economy.

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